The National Configuration Management Standard Procedure Document for Conducting Formal Configuration Audits of Operational Facilities

Department of Transportation

Federal Aviation Administration

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Configuration Management
Strategic Planning Committee
For: ANS-110**

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FOREWORD

The primary objective of this document is to provide a standardized national approach for ensuring the availability of quality space allocation drawings. Headquarters and the Regions have collaborated to create The National Configuration Management Standard Process for Conducting Formal Configuration Audits of Operational Facilities.

Facilities covered in this document include:

- ♦ Air Route Traffic Control Center (ARTCC)
- ♦ Airport Traffic Control Tower (ATCT)
- ♦ Terminal Radar Approach Control (TRACON)
- ♦ Automated Flight Service Station (AFSS)
- ♦ Air Route Surveillance Radar (ARSR-4)/Joint Surveillance Sites (JSS)
- ♦ Large TRACON
- ♦ Air Traffic Control System Command Center (ATCSCC)

The large number of projects planned for these facilities highlights the need for reliable and accessible facility information. Accurate data relating to available space, electrical power, and Heating, Ventilation, and Air Conditioning (HVAC) is an essential element in the support of modernization projects, Capital Investment Project (CIP) improvements, budget development, and transition planning

This document identifies the process used to audit and verify facility baseline data.

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Program Director, NAS Transition
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TABLE OF CONTENTS

1.0 INTRODUCTION

1.1 Purpose

The purpose of this document is to establish standards for planning, scheduling, and conducting formal configuration audits of facility baselines. The checklist within this document, Appendix A, shall be utilized for coordinating, participating in, and reporting audit activity. A standardized audit process will ensure the integrity of facility baselines.

1.2 Scope

This document covers the Regional Configuration Managers responsibilities for planning, conducting and reporting formal configuration audits for facility baselines. The standard checklists contained in Appendix A shall be used in conjunction with Federal Aviation Administration (FAA) Order 1800.8, National Airspace System Configuration Management, and Electronic Industry Association (EIA) Standard EIA 649, National Consensus Standard for Configuration Management, and MIL-HDBK-61, Configuration Management Guidance, for specific audit information.

The Configuration Manager is expected to have the expertise to perform the audit utilizing the checklist provided in Appendix A, recommend audit team candidates, and serve as a point of contact on audit activity.

Appendix B contains a list of acronyms used within this document.

2.0 APPLICABLE DOCUMENTS

FAA Order1800.8	National Airspace System Configuration Management
MIL-HDBK-61	Configuration Management Guidance
EIA 649	National Consensus Standard for Configuration Management

3.0 CONFIGURATION AUDIT OVERVIEW

Compliance with specifications, drawings, and Configuration Management (CM) requirements are verified by means of an audit. The configuration management community has established three types of formal configuration audits:

    a. Functional Configuration Audit (FCA) used to determine if the system meets the functional or performance requirements of the product specification;

    b. Physical Configuration Audit (PCA) determines if the system "as-built" matches the physical description shown in the documentation and drawings.

    c. Facility Audit is a specialized Physical Audit that determines if the facility "as-built" baseline drawings match the physical layout.

The FAA has defined facility space as a Configuration Item (CI). Successful completion of a facility audit is a prerequisite to the establishment or re-establishment of the facility baseline. Subsequently, all proposed changes to a baseline are processed via the National Airspace System (NAS) Change Proposal (NCP) process.

The baseline consists of the approved documentation defining the configuration of a CI during the operational phase. The Configuration Manager will use the audit findings and technical documentation to generate the initial case file, which will represent the baseline. The Configuration Manager will use subsequent audits to determine compliance with CM policy and guidance documentation established by the FAA under the Acquisition Management System (AMS) and the Regional Configuration Control Board (RCCB) Charter and Procedures.

3.1   Criteria for Establishing Facility Baselines

The requirement to establish a facility as baselined under Configuration Management (CM) shall be determined by assessing the impact of Capital Investment Project (CIP) projects along with regional and local initiated changes and/or improvements, which are expected to be implemented within the assessment period. Included in this are the complexities, number, and variety of new projects to be implemented, which will compete for floor space, electrical power, environmental, and operational resources. Those facilities with the greatest impact shall be placed under CM first. The goal is to place all of those facilities in the categories below under CM by the close of FY 2003.

    a. Air Route Traffic Control Center (ARTCC)
    b. Airport Traffic Control Tower (ATCT) with radar
    c. Terminal Radar Approach Control (TRACON)
    d. Automated Flight Service Station (AFSS)
    e. Air Route Surveillance Radar (ARSR-4) Federal Aviation Administration (FAA)/Air Force (AF) Joint Surveillance Sites (JSS).
    f. Large TRACON
    g. Air Traffic Control System Command Center (ATCSCC)

A typical drawing set for each of these facilities should include:

    a. Site Plan
    b. Roof Plan
    c. Floor Layout
        1. Administrative Areas
        2. Maintenance Areas
        3. Operational Areas
        4. Storage Areas
        5. Telco Areas
    d. Equipment Layout
        1. Cab, console location and equipment layout
        2. Enhanced Target Generator (ETG) Lab, console location and equipment layout

      3. Navigation/Communication Room, equipment layout and rack elevations

      4. Radar/Automation Room, equipment layout and rack elevations

      5. TRACON, console location and equipment layout

  e. Engine Generator (EG) Uninterruptible Power Supply (UPS) Layout

  f. Electrical One Line Diagram

  g. Critical Panelboard Schedules

4.0   SCHEDULING

After the initial baseline activities have been performed each region shall perform periodic facility audits. The quantity and type of documentation for consideration in the facility audit process should be based on the following:

  a. The complexity and criticality of the facility being audited

  b. Size and scope of the documentation

  c. Results from the previous audit

Audits should be performed on at least one facility per System Management Office (SMO) and/or Airway Facilities Sector (AF) per year. The goal is to improve the accuracy of CM drawings depicting operational space.

5.0   ROLES AND RESPONSIBILITIES

Region's carry the lead role and bear the ultimate responsibility for the integrity of facility configuration baselines. Thus, the performance and certification of a facility audit is a regional responsibility. However, the accreditation of a region's facility audit process is a NAS Transition and Integration (ANS) responsibility.

5.1.   Regions

It is the Regions responsibility to perform the Facility Audits on a periodic basis. Audits require regional cognizance, cooperation, and participation. Audit team members are chosen for their ability to participate in the process. Team members provide facilities, clearances, and applicable technical support.

5.1.1   Configuration Audit Team

An audit team shall be comprised of personnel who are technically capable of assessing the integrity of configuration managed documentation. Their expertise should include abilities to:

  a. Independently evaluate documentation

  b. Read and compare as-built drawings against physical layout

  c. Compare drawings and standards to the configuration item

The Configuration Manager shall determine the makeup of the audit team. A suggested team makeup is comprised of the following disciplines:

    a. Configuration Manager-Team Lead
    b. Transition Planning Representative
    c. Facility Representative

5.1.2 Audit Preparation

Standardized checklists for a facility audit are set forth in Appendix A. The pertinent facility documentation, depending on facility type, include:

    a. Site Plan
    b. Roof Layout
    c. Floor Layout
    d. Equipment Layout
    e. Engine Generator (EG)/Uninterruptible Power Supply (UPS) Layout
    f. Electrical One Line Diagram
    g. Panelboard Schedules

The Audit Team shall obtain a listing of the approved Configuration Control Decisions (CCDs) pertaining to the facility being audited.

A Facility Audit requires access to the actual "as-built" configured facility. Facility Audit assessments shall establish that the "as-built" CI is accurately and completely defined by the documentation. There shall be an index of all documents defining the CIs applicable to the facility. This documentation shall be obtained from the Configuration Status Accounting (CSA) system.

A standardized audit process will ensure the integrity of facility baselines and establish confidence in the CM program. The following items are required before beginning any audit:

    a. Schedules and agenda for the formal audit activity and any preliminary meetings;
    b. Detailed list of proposed audit tasks in accordance with the requirements defined in EIA 649 and MIL-HDBK-61;
    c. Outline of the audit in terms of location, available material, and participants;
    d. Reporting, including plan for recording and addressing of discrepancies;
    e. Description of the documentation to be used and/or made available during each audit;
    f. Checklist of specific items to examine and/or verify;
    g. Minutes, action items, and/or agenda(s) of any previous audits;
    h. Records of all updates to documentation.

5.1.3 Audit Reporting

After completion of the audit, the findings are recorded and provided to the Airway Facilities (AF) Division Manager and the Air Traffic (AT) Division Manager for review. The report is

published and distributed to the RCCB membership and the audited facility. The Configuration Manager is responsible for the recording, publishing, and distribution of the report. The findings shall be coordinated with audit team members. The audit report shall contain the purpose statement, date and location of the audit, participants, documentation reviewed, discrepancies, and follow-up action items with assignees, and due dates.

5.1.3.1 Audit Report Format

The format for the audit report is provided below.

    a. The title page shall contain the following:

        1. Title - Facility Audit
        2. Date
        3. Type of Facility
        4. Location of Facility
        5. Signatures of the Audit Team Members

    b. Contents shall include the following in the body of the document:

        1. Introduction:

            A) A statement relating to the purpose and/or objectives of the audit and the intended use of the documented minutes
            B) The original agenda and/or revisions thereto

        2. Administrative Data shall contain:

            A) Date and location of the audit
            B) Region under whose direction the audit was convened
            C) Name and/or organization of participants

        3. Material Reviewed:

            A) A description and listing of documentation
            B) Facility Drawings
            C) Other material reviewed during the audit

        4. Identify Changes Required:

            A) A description of all changes to the established baselines, included in NAS-MD-001, required as a result of the audit
            B) The description shall also include the justification for the changes and the organization's responsible for preparing the change proposal

        5. Statements relating to any issues identified during the audit. This shall include:

A) Statement of the issue and/or discrepancy
B) Resolution/action required by an audit team member(s) or individual identified by the Office of Primary Interest (OPI) responsible for the CI
C) Organization's that will participate in the resolution/actions required
D) Date by which the organization's are to complete a proposed resolution/action

5.1.3.2 Audit Results

The criterion for determining the results of an audit is:

a. How accurately the facility is identified by the as-built documentation;
b. How well the facility conforms to approved CCDs;

Significant deficiencies in regard to fulfilling any one or more of the above criteria raise serious questions concerning a facility's configuration integrity. The Configuration Manager forwards the results of an audit through formal notification. The results of an audit can fall into one of the following categories:

a. Approval - the audit was satisfactorily completed with no outstanding action items.
b. Contingent approval - the audit is not considered accomplished until the satisfactory completion of resultant action items and discrepancies.
c. Disapproval - the audit found serious inadequacies and/or significant deficiencies that must be corrected prior to the audit being re-accomplished.

Contingent approval will not be lifted and approval granted until satisfactory completion of all resolutions/actions required within the timeframe specified in the audit report. In the case of disapproval the audit must be re-accomplished and all resolutions/actions satisfactorily completed.

5.2   NAS Transition and Integration (ANS) Responsibilities

NAS Transition and Integration (ANS), as the Headquarters liaison to Regional CM activities, shall be responsible for performing periodic audits and/or reviews of the Regional CM activities. These audits and/or reviews shall verify that the regions are meeting their CM requirements including their facility baseline activities, RCCB effectiveness, and the accuracy and completeness of CM documentation.

Appendix A

Checklists for Establishment of and Auditing Facility Baselines

The checklists on the following pages should be utilized to evaluate facility drawings against the actual facility. Items identified on the checklist should be present on a typical set of facility drawings.

Site Plan

	Yes	No	Comment
Property Line			
Building Dimensions			
Auxiliary Buildings			
Electrical Service			
Commercial Switch			
Telephone Lines			
Sanitary Sewer Lines			
Septic Tank (if applicable)			
Water Lines			
Parking Area			
Docks			
Fuel Tanks			
Antennas (if applicable)			
Cooling Towers			

_____   _____

Audit Date   **Auditors Name/Routing**

A - 2

Roof Plan

	Yes	No	Comment
Air Conditioning (AC) Location			
Size of AC Units			
Age of AC Units			
Antennas Located			
Antennas Identified			
Satellite Located			
Satellite Identified			
Age of Roof			
Type of Roof			

_____
Audit Date

_____
Auditors Name/Routing

A - 3

Floor Layout

	Yes	**No**	**Comment**
Rooms Identified			
Room Numbers			
Doorway Dimensions			
Fixed Wall Partitions			
Electrical Panels Location			
Electrical Panels Identified			
Fire Alarm Panels Location			
Security Panels			
Halon Bottle Location			
Demarc Panel Locations			
Loading Docks			

Audit Date

Auditors Name/Routing

Equipment Layout

	Yes	No	Comment
Equipment Identified			
Equipment Legend			
Rack Elevations			
Console Layout			
Console Equipment			
Console Elevation			

Audit Date

Auditors Name/Routing

EG/UPS Layout

	Yes	No	Comment
Engine Generator			
Electrical Panels			
Switch Gear			
Bypass Switch			
Power Panels			
Fire Suppression Equipment			
Radiator/Exhaust			
Control Panel			
Eye Wash/Shower			
Batteries			
Load Bank			
UPS			
Water Pumps			
Air Handler			

_____

Audit Date

_____

Auditors Name/Routing

Critical Panelboard Schedules

	Yes	No	Comment
Panel Identifier			
Feed (Primary/Alternate)			
Panel Location			
Redundancy			
Harmonics			
Size of Panel (capacity)			
Breaker Assignments			
Panel Schedule Phases			
Loads			
Interrupt Rating			
Transfer Switches			
Revision Information			
Brand/Model #			
Installation/Comm Date			

Audit Date   **Auditors Name/Routing**

Appendix B

Acronym List

AC	Air Conditioning
AF	Air Force
AF	Airway Facilities
AFSS	Automated Flight Service Station
AMS	Acquisition Management System
ANS	NAS Transition and Integration
ARSR	Air Route Surveillance Radar
ARTCC	Air Route Traffic Control Center
AT	Air Traffic
ATCSCC	Air Traffic Control System Command Center
ATCT	Airport Traffic Control Tower
CCD	Configuration Control Decisions
CI	Configuration Items
CIP	Capital Investment Project
CM	Configuration Management
CSA	Configuration Status Accounting
EG	Engine Generator
EIA	Electronic Industry Association
ETG	Enhanced Target Generator
FAA	Federal Aviation Administration
FCA	Functional Configuration Audit
HDBK	Handbook
HVAC	Heating, Ventilation, and Air Conditioning
JSS	Joint Surveillance Sites
NAS	National Airspace System
NCP	NAS Change Proposal
OPI	Office of Primary Interest
PCA	Physical Configuration Audit
PCB&T	Personnel Compensation Benefits and Travel
RCCB	Regional Configuration Control Board
SMO	System Management Office
TRACON	Terminal Radar Approach Control
UPS	Uninterruptible Power Supply